

## WHAT IS CLAIMED IS:

1. A system for interfacing a communication signal with a three phase electrical power network in a building having at least one service panel, said system comprising:

a carrier current device providing a power line carrier signal;

a passive coupling device adapted to be connected to one of said at least one service panel for coupling said power line carrier signal to each phase of said three phase power distribution network of said building wherein said three phase power distribution network is a Wye-connected three phase power distribution network.

2. The system according to claim 1, wherein said one service panel is a service panel which is the most electrically centrally located service panel in said building.

3. The system according to claim 1, wherein said passive coupling is adapted to be coupled to a high voltage distribution system having a voltage of at least 277 volts.

4. The system according to claim 1, wherein said passive coupling device includes a transformer having an output connected across each one of said three phases and neutral.

5. A system for modifying a power distribution network to provide data communications, comprising:

a source of data communication located at a first position and outputting a power line carrier signal;

a passive coupler directly connected to a service location of said power distribution network for receiving said power line carrier signal and distributing said data on said power line distribution network wherein said service location is remote from said first location and wherein said power line distribution network is a Wye-connected power three phase power distribution network.

6. The system according to claim 5, wherein said passive coupler includes a transformer having an output connected across each one of said three phases and neutral.

7. The system according to claim 5, wherein said power distribution network includes at least two service locations wherein said service location directly connected to said passive coupler is the most centrally located of said at least two service locations with respect to the length of electrically wiring in said distribution network.

8. The system according to claim 5, wherein said passive coupler outputs a signal to each of three phases of said power distribution system.

9. The system according to claim 5, wherein said service location is the most electrically centrally located service location of said power distribution system.

10. The system according to claim 5, wherein said passive coupler is adapted to be coupled to high voltage distribution system having a voltage of at least 277 volts.

11. A system for interfacing a communication signal with each of a first portion and at least one second portion of a power distribution network to provide data communication to said power distribution network, comprising:

a signal source of data communication outputting a power line carrier signal;

a first passive coupler and at least one second passive coupler wherein each of said passive couplers are directly connected to a respective service location of each of said first and at least said one second portion of said power distribution network wherein each of said first and second portions are electrically isolated from each other with respect to data communications and wherein each of said first and at least one second passive couplers are connected to receive said outputted power line carrier signal from said signal source of data communication wherein said power distribution network includes Wye-connected three-phase power and each of said passive couplers outputs a signal to each of said three phases.

12. The system according to claim 11, wherein said power distribution network includes three-phase power and each of said passive couplers outputs a signal to each of said three phases.

13. A method for introducing communication data into a power distribution system of a building, comprising the steps of;

generating a power line carrier signal at a first location;

passively coupling said power line carrier signal to a service location point of said power distribution system wherein said service location point is remote from said first location wherein said power distribution system is a Wye-connected power distribution system.

14. The method according to claim 13, wherein said step of passive coupling includes providing said carrier signal to an input of a transformer and wherein an output of said transformer is connected across each one of said three phases and neutral.

15. The method according to claim 13, wherein the step of passively coupling said power line carrier signal to a service location includes the step of passively coupling said power line carrier signal to each of three phases of said power distribution system.

16. The method according to claim 15, wherein the step of passively coupling said power line carrier signal to a service location point of said power distribution system includes the step of coupling said power line carrier signal to a high voltage distribution system having a voltage of at least 277 volts.

17. A system for interfacing a communication signal with a three phase electrical power network in a building having at least one service panel, said system comprising:

a carrier current device providing a power line carrier signal;

a passive coupling device adapted to be connected to one of said at least one service panel for coupling said power line carrier signal to each phase of said three phase power

distribution network of said building wherein said three phase power distribution network is a Delta-connected three phase power distribution network.

18. The system according to claim 17, wherein said one service panel is a service panel which is the most electrically centrally located service panel in said building.

19. The system according to claim 17, wherein said passive coupling is adapted to be coupled to a high voltage distribution system having a voltage of at least 277 volts.

20. The system according to claim 17, wherein said passive coupler device includes a transformer device providing a signal voltage differential across all pairs of combinations of said three phases wherein a number of turns into output phase winding of said transformer are adjusted as a function of a number of turns in the primary winding of said transformer in order to substantially equalize signal couplings effectiveness between said primary winding and each of said pairs.

21. A system for modifying a power distribution network to provide data communications, comprising:

a source of a data communication located at a first position and outputting a power line carrier signal;

a passive coupler directly connected to a service location of said power distribution network for receiving said power line carrier signal and distributing said data on said power line distribution network wherein said service location is remote from said first location and wherein said power line distribution network is a Wye-connected power three phase power distribution network.

22. The system according to claim 21, wherein said passive coupler device includes a transformer device providing a signal voltage differential across all pairs of combination of said three phases wherein a number of turns into output phase winding of said transformer are adjusted as a function of a number of turns in the primary winding of said

transformer in order to substantially equalize signal couplings effectiveness between said primary winding and each of said pairs.

23. A system for modifying a power distribution network to provide data communications, comprising:

a source of data communication located at a first position and outputting a power line carrier signal;

a passive coupler directly connected to a service location of said power distribution network for receiving said power line carrier signal and distributing said data on said power line distribution network wherein said service location is remote from said first location and wherein said power line distribution network is a Delta-connected power three phase power distribution network.

24. The system according to claim 23, wherein said passive coupling device passively couples said power line carrier signal to each of three phases of said power distribution system

25. The system according to claim 23, wherein said power distribution network includes at least two service locations wherein said service location directly connected to said passive coupler is the most centrally located of said at least two service locations with respect to the length of electrically wiring in said distribution network.

26. The system according to claim 23, wherein said passive coupler device includes a transformer device providing a signal voltage differential across all pairs of combinations of said three phases wherein a number of turns into output phase winding of said transformer are adjusted as a function of a number of turns in the primary winding of said transformer in order to substantially equalize signal couplings effectiveness between said primary winding and each of said pairs.

27. A method for introducing communication data into a power distribution system of a building, comprising the steps of;

generating a power line carrier signal at a first location;

passively coupling said power line carrier signal to a service location point of said power distribution system wherein said service location point is remote from said first location wherein said power distribution system is a Delta-connected system.

28. The method according to claim 27, wherein the step of passively coupling said power line carrier signal to a service location includes the step of passively coupling said power line carrier signal to each of three phases of said power distribution system.

29. The method according to claim 27, wherein said step of passively coupling said power line carrier signal to a service location point includes the step of passively coupling said power line carrier signal to the most electrically centrally positioned service location point of said power distribution system.

30. The method according to claim 27, wherein the step of passively coupling said power line carrier signal to a service location point of said power distribution system includes the step of coupling said power line carrier signal to a high voltage distribution system having a voltage of at least 277 volts.